Simple Planning Essentials for Projects
2009 NASA PM Challenge

Maura Fujieh, PMP

NASA Ames Research Center

Outline

- Introduction
- In the Beginning
- Love Your Planning Data
- Lessons Learned

Introduction

Small budget for project support

Milestones due Year1

NRA solicitations

New work agreements

4 new projects

Work at 4 Centers

Integrated 3-4 levels below project

Outline

- Introduction
- In the Beginning
  - Ghost of Projects Past
- Love Your Planning Data
- Lessons Learned

Common Project Scenarios

- Another call for project data
- Why don't your numbers match?
- Who's really responsible for the work?

How can we do this better?

Better Planning

... but isn't this a lot of work?

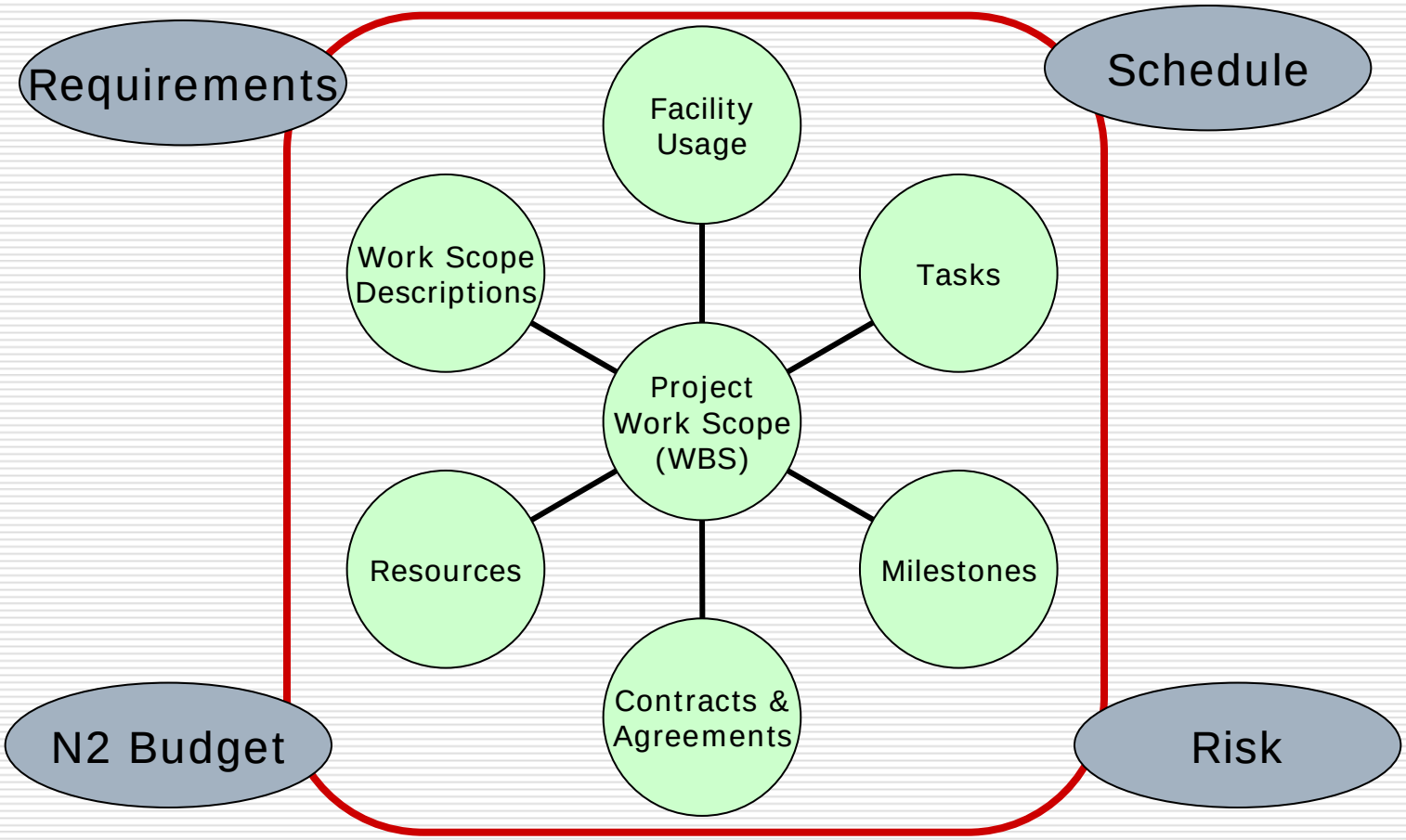
Pay now or pay later …

- Who's got that data?
- Using outdated information
- Errors in translating project data to another format
- Great results, wrong deliverable

Outline

- Introduction
- In the Beginning
- Love Your Planning Data
  - Overview
  - Key Planning Steps
  - Tool Examples
- Lessons Learned

Today's discussion focuses on:



Key planning steps

1. Is the entire project there?
   - *Include technical scope, resources, milestones and work descriptions for each WBS element*
2. Plan low
   - *Identify work done at the lowest work group*
   - *Assign resources in "categories"*
   - *Use identifier fields to add more definition*
3. Automate analysis
   - *Consolidate all planning detail*
   - *Use automation to summarize and cross-check*

Step 1 – Plan to your WBS

PRJ	*Sample Project*
PRJ.05	*Guidance, Navigation, Control*
PRJ.05.03	*Algorithm Design & Implementation*
PRJ.05.03.02	*HRRLS Vehicle Modeling Analysis & Design*

Description of work
Control and trajectory optimization
Modeling and uncertainty characterization
Control-relevant vehicle modeling
Vehicle optimization with respect to controls
Adaptive distortion of hypersonic subsystem

Step 2: Plan low

PRJ	*Sample Project*
PRJ.05	*Guidance, Navigation, Control*
PRJ.05.03	*Algorithm Design & Implementation*
PRJ.05.03.02	*HRRLS Vehicle Modeling Analysis & Design*

			Fiscal Year 2009					
			Heads			Procurement		
Center	Org	Description of work	FTE	WYE	Travel ($K)	WYE ($K)	Other ($K)	Total ($K)
		Control and trajectory optimization						10
		Modeling and uncertainty characterization						417
		Control-relevant vehicle modeling						547
		Vehicle optimization with respect to controls						0
		Adaptive distortion of hypersonic subsystem						14

Step 2: Add assignments/resources

PRJ	*Sample Project*
PRJ.05	*Guidance, Navigation, Control*
PRJ.05.03	*Algorithm Design & Implementation*
PRJ.05.03.02	*HRRLS Vehicle Modeling Analysis & Design*

					Fiscal Year 2009					
					Heads			Procurement		
Center	Org	Description of work	Milestone	Comment	FTE	WYE	Travel ($K)	WYE ($K)	Other ($K)	Total ($K)
LaRC	D316	Control and trajectory optimization			0.375	0	0	0	10	10
GRC	RTE	Modeling and uncertainty characterization			0	0	0	0	417	417
LaRC	D316	Control-relevant vehicle modeling			0	0	0	0	547	547
LaRC	D316	Vehicle optimization with respect to controls			0.375	0	0	0	0	0
ARC	TI	Adaptive distortion of hypersonic subsystem			1	0	0	0	14	14

Step 2: Add identifier fields

PRJ	*Sample Project*
PRJ.05	*Guidance, Navigation, Control*
PRJ.05.03	*Algorithm Design & Implementation*
PRJ.05.03.02	*HRRLS Vehicle Modeling Analysis & Design*

							Fiscal Year 2009					
							Heads			Procurement		
HM/HR	Type	Center	Org	Description of work	Milestone	Comment	FTE	WYE	Travel ($K)	WYE ($K)	Other ($K)	Total ($K)
		LaRC	D316	Control and trajectory optimization	MS.05.03.001	Kari Lee	0.375	0	0	0	10	10
		GRC	RTE	Modeling and uncertainty characterization	MS.05.03.009	Round 2/ Year 2	0	0	0	0	417	417
		LaRC	D316	Control-relevant vehicle modeling	MS.05.03.011	Round 2/ Year 1	0	0	0	0	547	547
		LaRC	D316	Vehicle optimization with respect to controls	MS.05.03.010	Kari Lee	0.375	0	0	0	0	0
		ARC	TI	Adaptive distortion of hypersonic subsystem	MS.05.03.004	David Nguyen	1	0	0	0	14	14

Step 2: and populate

PRJ	*Sample Project*
PRJ.05	*Guidance, Navigation, Control*
PRJ.05.03	*Algorithm Design & Implementation*
PRJ.05.03.02	*HRRLS Vehicle Modeling Analysis & Design*

							Fiscal Year 2009					
							Heads			Procurement		
HM/HR	Type	Center	Org	Description of work	Milestone	Comment	FTE	WYE	Travel ($K)	WYE ($K)	Other ($K)	Total ($K)
HRRLS	Work	LaRC	D316	Control and trajectory optimization	MS.05.03.001	Kari Lee	0.375	0	0	0	10	10
	NRA	GRC	RTE	Modeling and uncertainty characterization	MS.05.03.009	Round 2/ Year 2	0	0	0	0	417	417
	NRA	LaRC	D316	Control-relevant vehicle modeling	MS.05.03.011	Round 2/ Year 1	0	0	0	0	547	547
HRRLS	Work	LaRC	D316	Vehicle optimization with respect to controls	MS.05.03.010	Kari Lee	0.375	0	0	0	0	0
HRRLS	Work	ARC	TI	Adaptive distortion of hypersonic subsystem	MS.05.03.004	David Nguyen	1	0	0	0	14	14

Step 3 – Consolidate data

Discipline ID	Task ID	Type of Work	Resource Center	Resource Organization	Work Description	Work Comments	Resource Type	Resource Year	Resource Value	Resource Reference
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	FTE Count	FY09	1	2
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	Travel (K$)	FY09	18	2
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	Other Procurement (K$)	FY09	10	2
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	FTE Count	FY10	1	2
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	Travel (K$)	FY10	18	2
HYP.05	HYP.05.00.00	Work	ARC	TI	API Discipline Management	Don Simonson	Other Procurement (K$)	FY10	10	2
HYP.05	HYP.05.00.00	Travel	LaRC	D316	LaRC Travel Budget		Travel (K$)	FY09	3	3
HYP.05	HYP.05.00.00	Travel	LaRC	D316	LaRC Travel Budget		Travel (K$)	FY10	3	3
HYP.05	HYP.05.00.00	Travel	GRC	RTT	GRC Travel Budget		Travel (K$)	FY09	4	4
HYP.05	HYP.05.00.00	Travel	GRC	RTT	GRC Travel Budget		Travel (K$)	FY10	4	4
HYP.05	HYP.05.02.01	Work	GRC	RHC	Propulsion Control Research,LIMX inlet test,model development	Tom Smith	FTE Count	FY09	1	1
HYP.05	HYP.05.02.01	Work	GRC	RHC	Propulsion Control Research,LIMX inlet test,model development	Tom Smith	FTE Count	FY10	1	1
HYP.05	HYP.05.02.01	Work	GRC	RHC	Inlet Modeling	Paul Jackson	FTE Count	FY09	1	2
HYP.05	HYP.05.02.01	Work	GRC	RHC	Inlet Modeling	Paul Jackson	Other Procurement (K$)	FY09	25	2
HYP.05	HYP.05.02.01	Work	GRC	RHC	Inlet Modeling	Paul Jackson	FTE Count	FY10	1	2
HYP.05	HYP.05.02.01	Work	GRC	RHC	Inlet Modeling	Paul Jackson	Other Procurement (K$)	FY10	20	2
HYP.05	HYP.05.02.01	Work	GRC	RHC	Support control testing of LIMX inlet in wind tunnel	Amy Johnson	FTE Count	FY09	0.4	3
HYP.05	HYP.05.02.01	Work	GRC	RHC	Support control testing of LIMX inlet in wind tunnel	Amy Johnson	FTE Count	FY10	0.4	3
HYP.05	HYP.05.02.01	Work	GRC	RHA	Modeling of high speed flow path	John Wu	FTE Count	FY09	0.8	4
HYP.05	HYP.05.02.01	Work	GRC	RHA	Modeling of high speed flow path	John Wu	FTE Count	FY10	0.8	4
HYP.05	HYP.05.02.01	Work	GRC	DSS	Inlet actuator modeling	Jerry Wilson	FTE Count	FY09	0.3	5
HYP.05	HYP.05.02.01	Work	GRC	DSS	Inlet actuator modeling	Jerry Wilson	FTE Count	FY10	0.3	5
HYP.05	HYP.05.02.01	Work	GRC	DSS	Inlet modeling tool enhancement	William Jay	FTE Count	FY09	0.5	6
HYP.05	HYP.05.02.01	Work	GRC	DSS	Inlet modeling tool enhancement	William Jay	FTE Count	FY10	0.5	6
HYP.05	HYP.05.02.02	Work	LaRC	D316	Falcon and X51 System Idenification	Jean Loos	FTE Count	FY09	0.25	1
HYP.05	HYP.05.02.02	Work	LaRC	D316	Falcon and X51 System Idenification	Jean Loos	FTE Count	FY10	0.25	1
HYP.05	HYP.05.02.02	Work	ARC	TI	Simulation integration and experimentation	Joe Swanson	WYE Count	FY09	1	2
HYP.05	HYP.05.02.02	Work	ARC	TI	Simulation integration and experimentation	Joe Swanson	WYE Cost (K$)	FY09	232	2
HYP.05	HYP.05.02.02	Work	ARC	TI	Simulation integration and experimentation	Joe Swanson	Other Procurement (K$)	FY09	22	2
HYP.05	HYP.05.02.02	Work	ARC	TI	Simulation integration and experimentation	Joe Swanson	WYE Count	FY10	1	2
HYP.05	HYP.05.02.02	Work	ARC	TI	Simulation integration and experimentation	Joe Swanson	WYE Cost (K$)	FY10	243	2
HYP.05					Simulation integration and					

WARNING

Analysis Example 1

Sum of Value		Year	
Center	Resource Type	FY09	FY10
ARC	FTE Count	4.2	3.9
	WYE Count	1	1
	Travel (K$)	18	18
	Other Procurement (K$)	113	112
	WYE Cost (K$)	232	243
LaRC	FTE Count	1	1
	Travel (K$)	3	3
	Other Procurement (K$)	10	10
	NRA (K$)	547	551
GRC	FTE Count	4	4
	Travel (K$)	4	4
	Other Procurement (K$)	25	20
	NRA (K$)	417	

Analysis Example 2

Project ID	(All)
Project Name	(All)
Sub-Project ID	(All)
Sub-Project Title	(All)
Task ID	(All)
Task Title	(All)
Org	(All)
Type of Work	(All)
Work Description	(All)
Comments	(All)
Milestone	(All)

Sum of Value		Year	
Center	Resource Type	FY09	FY10
ARC	FTE Count	4.2	3.9
	WYE Count	1	1
	Travel (K$)	18	18
	Other Procurement (K$)	113	112
	WYE Cost (K$)	232	243
LaRC	FTE Count	1	1
	Travel (K$)	3	3
	Other Procurement (K$)	10	10
	NRA (K$)	547	551
GRC	FTE Count	4	4
	Travel (K$)	4	4
	Other Procurement (K$)	25	20
	NRA (K$)	417	

Project ID	(All)
Project Name	(All)
Sub-Project ID	(All)
Sub-Project Title	(All)
Task ID	(All)
Task Title	(All)
Type of Work	(All)
Work Description	(All)
Comments	(All)
Milestone	(All)

Sum of Value			Year	
Center	Org	Resource Type	FY09	FY10
ARC	TI	FTE Count	4.2	3.9
		WYE Count	1	1
		Travel (K$)	18	18
		Other Procurement (K$)	113	112
		WYE Cost (K$)	232	243
LaRC	D316	FTE Count	1	1
		Travel (K$)	3	3
		Other Procurement (K$)	10	10
		NRA (K$)	547	551
GRC	RTT	Travel (K$)	4	4
	RHC	FTE Count	2.4	2.4
		Other Procurement (K$)	25	20
	RHA	FTE Count	0.8	0.8

Analysis Example 3

Project ID	(All)
Project Name	(All)
Sub-Project ID	(All)
Sub-Project Title	(All)
Task Title	(All)
Task ID	(All)
Org	(All)
Resource Type	FTE Count
Type of Work	(All)
Comments	(All)
Milestone	(All)

What kind of work is being done at each Center?

Sum of Value		Year	
Center	Work Description	FY09	FY10
ARC	Management Oversight	0.42	0.15
	API Discipline Management	1	1
	Control relevent hypersonic vehicle aerodynamics	1	1
	Control relevant hypersonic vehicle areo-elastic interaction	0.5	0.5
	GPC advanced hypersonic control	0.28	0.25
	Adaptive Distortion of Hypersonic Subsystem Interactions	1	1
LaRC	Falcon and X51 System Idenification	0.25	0.25
	Control and Trejectory Optimization for Hypersonic Vehicles	0.375	0.375
	Vehicle Optimization with Respect to Controls	0.375	0.375
GRC	Propulsion Control Research,LIMX inlet test,model development	1	1
	Inlet Modeling	1	1
	Support control testing of LIMX inlet in wind tunnel	0.4	0.4
	Modeling of high speed flow path	0.8	0.8
	Inlet actuator modeling	0.2	0.2

Analysis Example 4

Project ID	(All)
Project Name	(All)
Sub-Project ID	(All)
Sub-Project Title	(All)
Task Title	(All)
Org	(All)
Work Description	(All)
Type of Work	(All)
Milestone	(All)

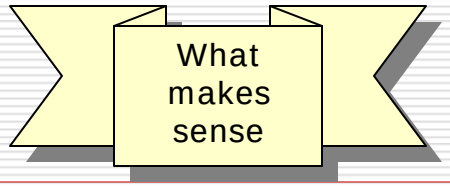
Who should be charging to my project?

Sum of Value			Resource	Year
			FTE Count	
Center	Comments	Task ID	FY09	FY10
ARC	Jorge Rodrigues	HYP.05.02.02	1	1
	Peter Chan	HYP.05.02.02	0.78	0.75
	David Nguyen	HYP.05.03.02	1	1
	Don Simonson	HYP.05.00.00	1	1
LaRC	Jean Loos	HYP.05.02.02	0.25	0.25
	Kari Lee	HYP.05.03.02	0.75	0.75
GRC	Tom Smith	HYP.05.02.01	1	1
	Paul Jackson	HYP.05.02.01	1	1
	Amy Johnson	HYP.05.02.01	0.4	0.4
	John Wu	HYP.05.02.01	0.8	0.8
	Jerry Wilson	HYP.05.02.01	0.3	0.3
	William Jay	HYP.05.02.01	0.5	0.5

Put your data in the center

Staying ahead of the data

- Data systems keep the connections between planning elements
  - Allow information to be utilized in multiple ways
  - Provides single repository for data
- Data systems can require support and tool-specific processes
  - No tool replaces good people
  - Accurate data requires project support



Outline

- Introduction
- In the Beginning
- Love Your Planning Data
- Lessons Learned

Lessons Learned – Process

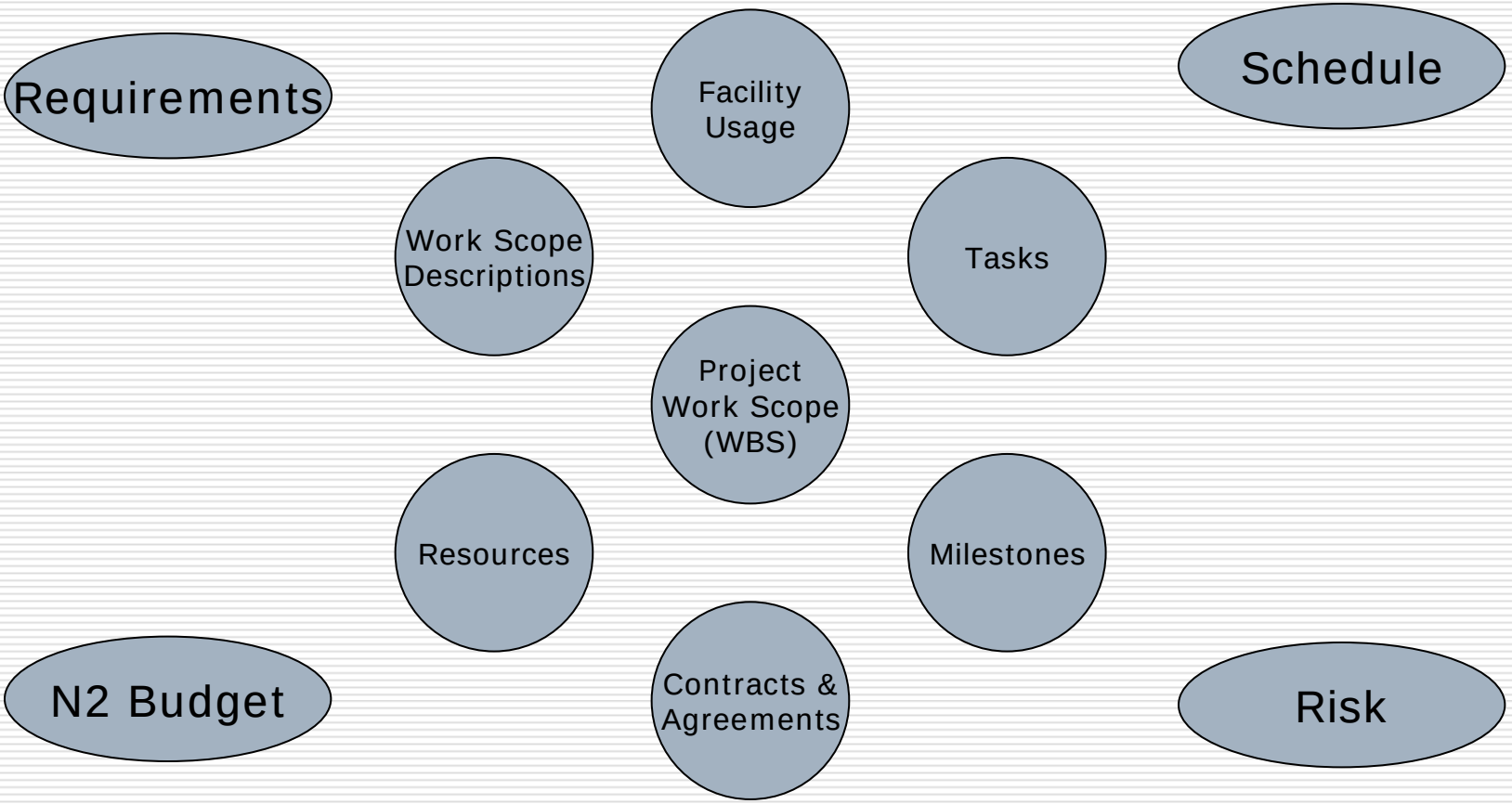
- Communication is critical when formats or processes change
  - Be sure to include rational explanations and “big picture”
  - Remember to include EVERYONE who uses project data, especially those “outside” the project
- Change takes time. Consider incremental changes or a phased approach.

Questions

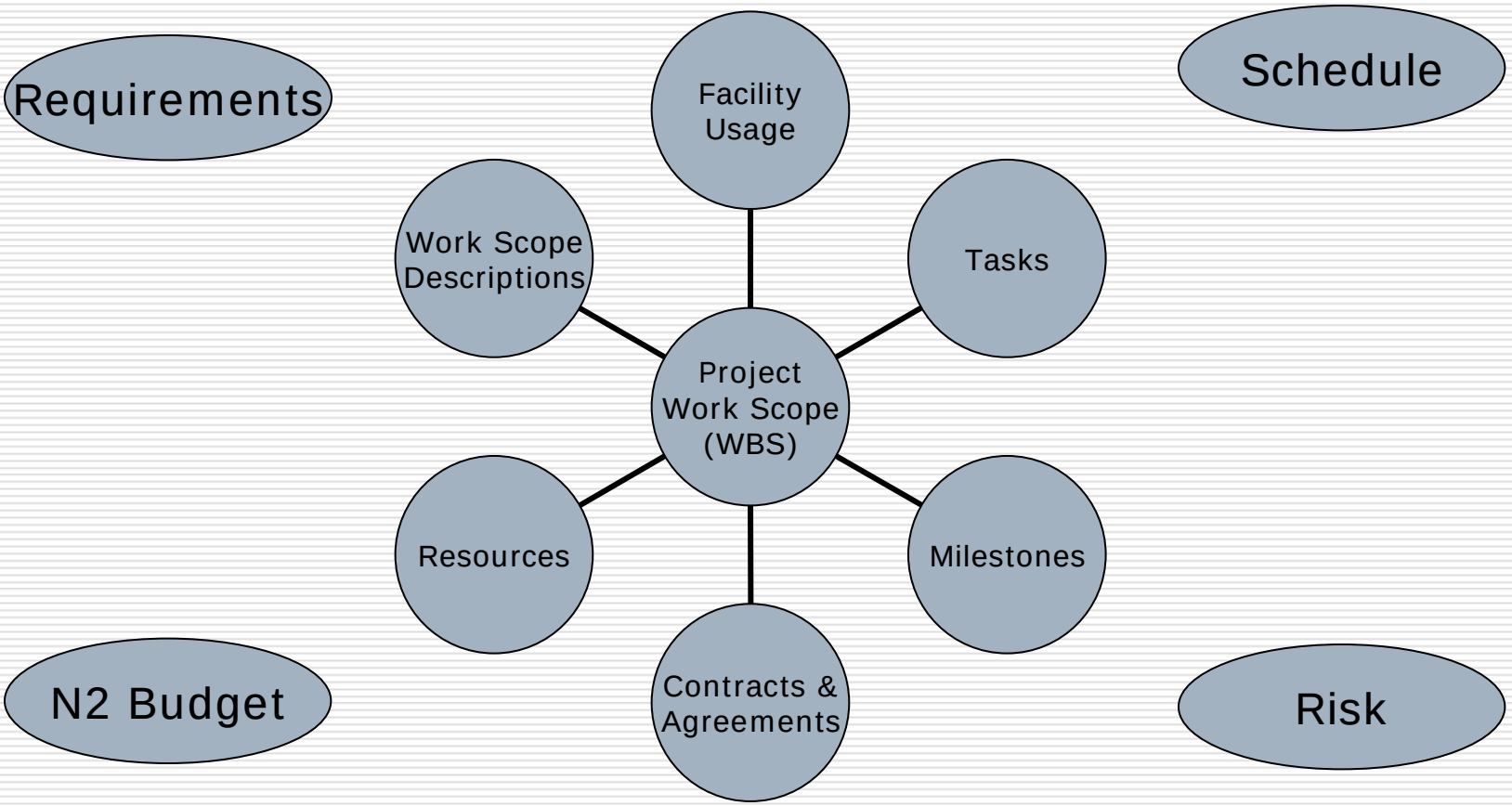
Thank you very much

Back-up Material

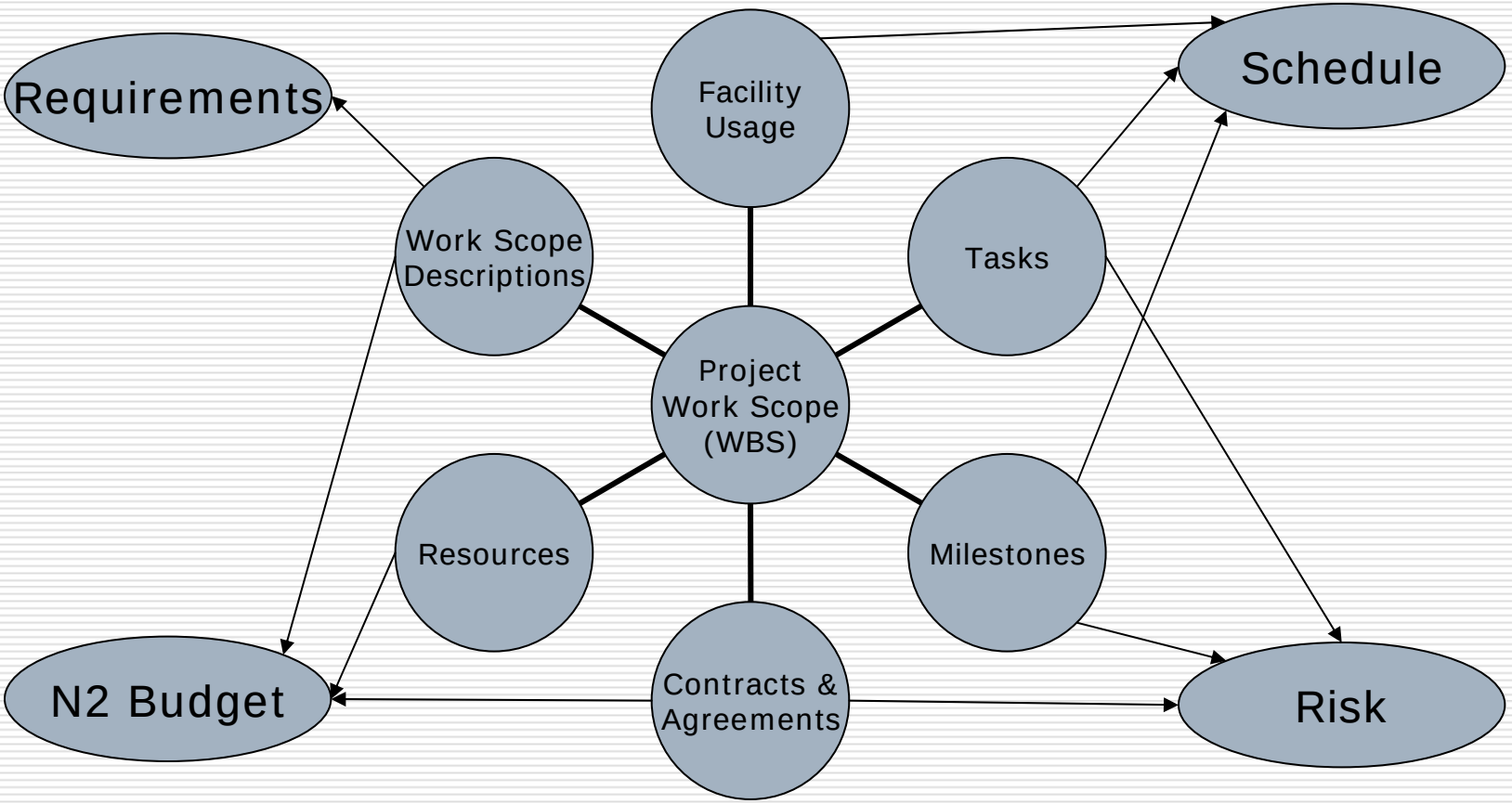
Results of planning - data



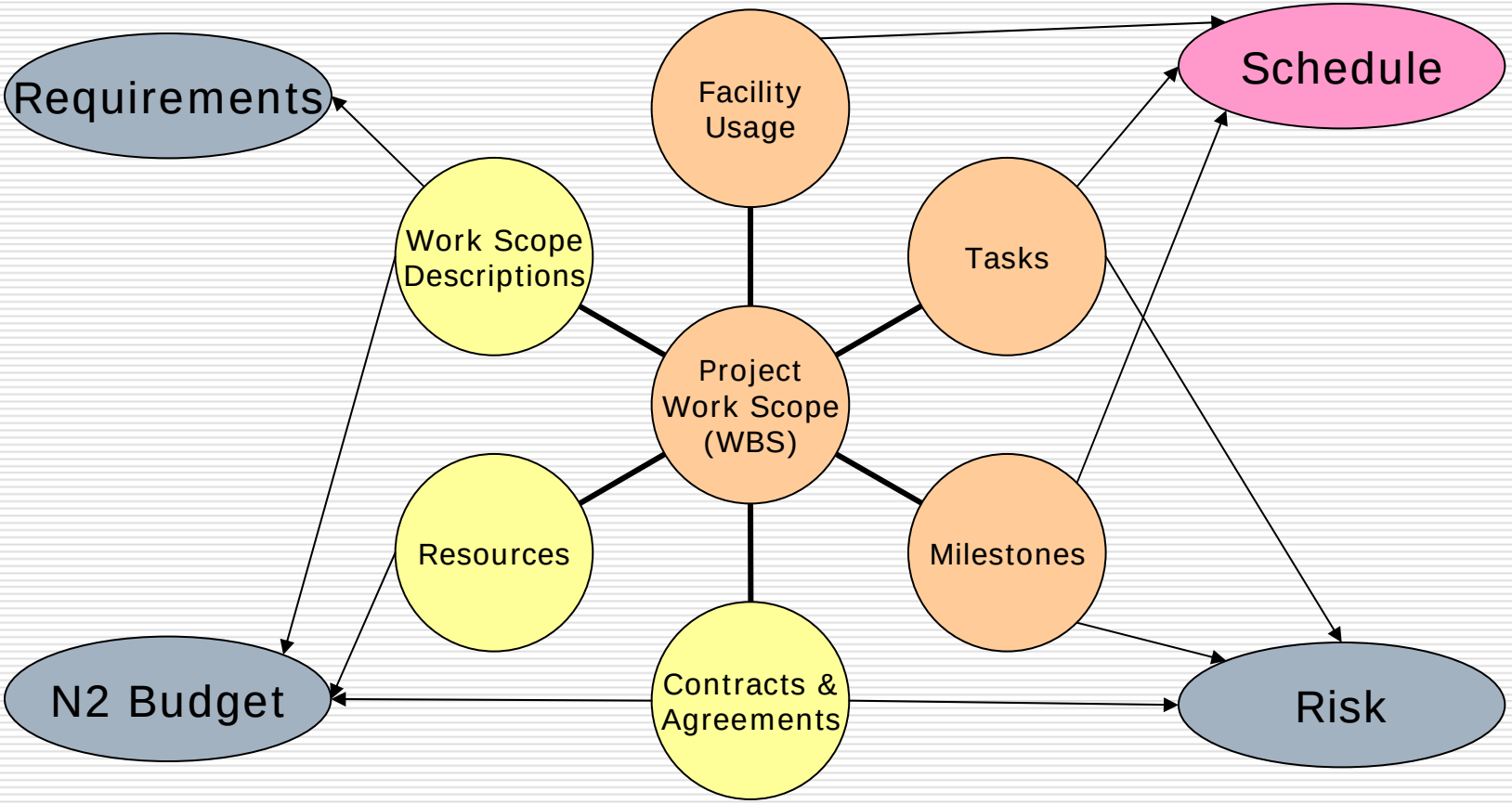
...structured around a WBS



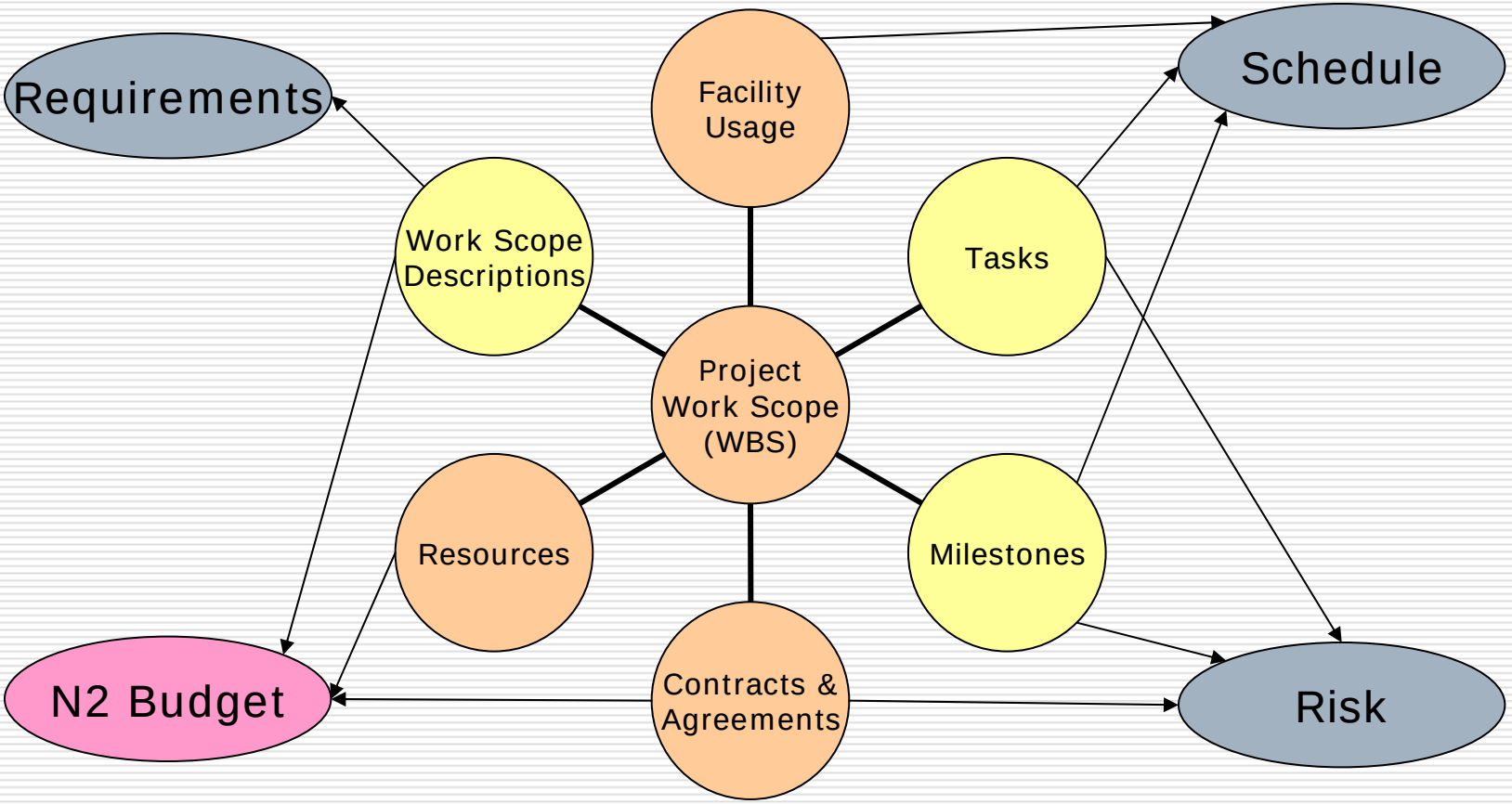
… linked to project documents



For example: project schedule



For example: budget breakdown



Today's discussion focuses on: